



Form GSOP 1-PIN (04/98)

STATE OF CALIFORNIA
Department of General Services - Office of Procurement

PURCHASE ORDER

Page 1

Purchase Order No. Rev. Date
62218 6/30/2008

Supplier No.	Solicitation No.	Delivery Date	FOB Point	Invoice Terms
796130	57054	90 Days ARO	Destination	
S h T i o p AIR RESOURCES BOARD 2769 TEEPEE DR STOCKTON CA 95205 Attn: ROBERT IANNI		C h a T r o g e AIR RESOURCES BOARD PO BOX 1436 SACRAMENTO, CA 95812-1436 ACCOUNTING (916) 327-0631		
Agency Billing	Agency Purchase Estimate	Purchase Estimate	Revision	
64900	PE079003	67160	1	
Agency Contact		Phone	Date Received	
LYNN PILE		916-327-5754		

GOODRUM INTERNATIONAL
16425 HARBOR BLVD, #244
FOUNTAIN VALLEY, CA 92708
Attn: MARK R GOODRUM

Phone: 714-418-9504

Item No.	Quantity	Unit	Commodity Code	Description	Unit Price	Extension
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THE GENERAL PROVISIONS FOR NON-IT COMMODITIES ARE HEREBY INCORPORATED BY REFERENCE. THESE GENERAL PROVISIONS CAN BE OBTAINED BY PHONING (916) 375-4400 OR BY ACCESSING OUR WEBSITE AT:

www.documents.dgs.ca.gov/pd/modellang/GPhonIT0407.pdf

THE FOLLOWING INFORMATION IS PROVIDED FOR AGENCY USE ONLY:

PRIME CONTRACTOR: NS

1	1	EA	4910-000-0006-8	EMISSION ANALYZER Diesel Emission Analyzer Console and Control System; as described meeting the requirements (Section 3) of the attached specification #4910-0086 of two pages.	206,300.0000	206,300.00
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Brand: AVL

Model: AMA I60

Total Value: 206,300.00

ATTACHMENTS:

THE FOLLOWING ATTACHED DOCUMENTS ARE PART OF THIS PURCHASE ORDER:

- SPECIFICATION #4910-0086, DATED JULY 14, 2008
- ACCEPTANCE TESTING 67160AT3

SET IN PLACE & OPERATIONAL:

The vendor will be required to unpack and set the material in place as directed, remove all dunnage and instruct agency operating personnel in its use.

ELECTRICAL AND MECHANICAL EQUIPMENT:

All electrical and mechanical equipment furnished shall comply with the California Administrative Code; Title 8 (Industrial Safety Orders), Title 24 (State Building Standards Law) and Title 17 (Public Health). All electrical equipment furnished shall be grounded, with any exceptions only as approved in the referenced applicable titles.

Sales and/or use tax to be extra unless noted above

Buyer KATHLEEN SANBORN	Phone 916-375-4403	BOC Number
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Department of General Services - Office of Procurement

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Item No.	Quantity	Unit	Commodity Code	Description	Unit Price	Extension
<p><u>DELIVERY:</u></p> <p>For the purpose of this purchase order, F.O.B. Destination will be accepted.</p>						
<p><u>SITE PREPARATION:</u></p> <p>Supplier shall provide to CARB a written site preparation specification and schedule for the system within thirty (30) calendar days of award. The written, detailed specifications/schedule is to ensure efficient environmental and functional operation of the equipment.</p> <p>CARB shall prepare the site location based upon the equipment and details associated with power and environmental control requirements. If requested, the supplier may work with CARB to ensure the site is prepared prior to installation.</p>						
<p><u>INSTALL/SET-UP:</u></p> <p>The supplier shall be responsible for all installations, support necessary to install/set-up, and make the systems operational at CARB, 2769 Teepee Dr, Stockton, CA 95205, within 30 days after delivery. The installation dates may be changed by written mutual consent between the supplier and CARB.</p> <p>The supplier shall certify in writing that the equipment is ready for use, and operates in conformance with the specifications. The supplier shall certify in writing that the equipment is ready for the operational control by CARB. CARB will accept control of the equipment for the purpose of validating its installation and work with the supplier to perform the Acceptance Testing. All installations shall be performed by factory trained and certified technicians for the specific equipment and systems listed in the bid requirements.</p>						
<p><u>ACCEPTANCE:</u></p> <p>Acceptance testing shall ensure that the Diesel Emission Analyzer Console and Control System operates properly. The supplier must certify in writing that the equipment is fully functional within five (5) days prior to acceptance testing. The Acceptance Test is defined in document 67160at3.</p> <p>The system will not be accepted by CARB until the Acceptance Test has been successfully completed. If the system fails the first and second Acceptance Test attempts, CARB has the option to either default the supplier or allow for a third and final retest run. Any retest shall be performed under the same test conditions stated in 67160at3. Failure of this last retest shall automatically cause the supplier to be in default. Note: Time between retest attempts one-two and two-three shall not exceed 5 business days from the last testing date unless mutually agreed upon.</p> <p>Upon successful completion of the Acceptance Test, CARB will notify the supplier in writing of the equipments acceptance.</p> <p>DGS may witness the acceptance testing and shall receive a copy of the Letter of Acceptance from CARB to the supplier.</p>						
<p><u>OPERATIONAL HOURS:</u></p> <p>The services shall be provided during the hours of operation: 7:00 AM to 5:00 PM, Monday through Friday; excluding State holidays.</p>						
<p><u>MAINTENANCE SERVICE & PARTS:</u></p> <p>Service and support shall be available as follows:</p>						

PURCHASE ORDER CONTINUATION

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<i>Purchase Order No.</i>	<i>Revision</i>	<i>Date</i>	<i>Supplier No.</i>	<i>Supplier Name</i>
62218		6/30/2008	796130	GOODRUM INTERNATIONAL

<i>Item No.</i>	<i>Quantity</i>	<i>Unit</i>	<i>Commodity Code</i>	<i>Description</i>	<i>Unit Price</i>	<i>Extension</i>
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During Operational Hours:

- Respond via telephone within (2) hours of request for service and/or repair.
- Be onsite within forty-eight (48) hours of request for service and/or repair.

Supplier shall provide on-site, maintenance for all of the equipment covered by this agreement during the hours specified, to keep the equipment in the proper operating (optimal) condition.

The supplier shall have replacement parts available upon CARB's request either through stock or loaner while the failed component is out for service.

All repairs performed by supplier must adhere to manufacturer's safety requirements. Supplier may not remove or bypass any safety devices in order to facilitate repair and operation of equipment.

SERVICE TECHNICIANS:

The supplier shall provide fully trained and qualified technicians for the specific equipment and systems listed in this agreement. All of the supplier's technicians performing maintenance at the work-site during the term of this agreement are subject to CARB security clearance requirements prior to their being admitted to the work-site.

CARB reserves the right to bar any supplier's employee from the work-site.

TRAINING:

Training must be provided to ensure assigned staff is technically competent to operate the Emission Analyzer.

Supplier shall provide on site training to a minimum of 7 employees to bring the staff to a level that assures effective operation of the Emission Analyzer. The supplier shall coordinate a training schedule within five (5) days of completing the acceptance testing. CARB shall not incur any costs associated with this training.

Training shall be provided by a factory certified or trained representative. Training shall cover all aspects of the equipment's operation and routine maintenance.

If there are any special tools required for normal operation, one set shall be provided at no cost to CARB.

STANDARD COMMERCIAL PRODUCT:

The equipment offered shall be in accordance with the requirements of this document. Features that are part of the manufacturer's standard commercial product shall be included in the equipment being furnished. A standard commercial product is a product, which has been sold or is currently being offered for sale on the commercial market through manufacturer's catalogs, brochures, or advertisements, and represents the latest production model. The equipment shall be new and latest model in current production. Used, shopworn, demonstrator, prototype, or discontinued models are not acceptable.

CHANGE ORDERS:

This Purchase Order may be amended, modified, or terminated at any time by mutual agreement of the parties in writing. Change orders amending, modifying or terminating the Purchase Order, including any modifications of the compensation payable, may be issued only by the State Procurement Officer. All such change orders shall be

Department of General Services - Office of Procurement

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62218		6/30/2008	796130	GOODRUM INTERNATIONAL

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<p>in writing and issued only upon written concurrence of the supplier. Termination, as that term is used in this section, does not include termination for default of the supplier.</p> <p>This purchase order is being awarded on September 26, 2008 pursuant to Government Code Section 13332.17. Any encumbrances made pursuant to this purchase order shall be construed to have been made on the last day of the preceding fiscal year.</p> <p>This Purchase order has been registered into the state contract and procurement registration system (https://www.scprs.dgs.ca.gov/). The registration number is 39000908334915.</p>						



STATE OF CALIFORNIA Bid Specifications
Diesel Emission Analyzer Console and Control
System

4910-0086

1 Scope

The requirement herein describes a Diesel Emission Analyzer Console and Control System for California Air Resource Board (CARB) to be used in the testing of raw exhaust emission measurements of heavy-duty diesel vehicles that are being tested on a water-brake chassis dynamometer. The System includes a Control Station (includes software, monitor, keyboard, mouse and desk top system), Console/Rack to house the analyzers and gas divider, two Oxides of Nitrogen Analyzers (NO/NOx), one Total Hydrocarbon Analyzer (THC), one Carbon Monoxide Analyzer (CO), one Carbon Dioxide Analyzer (CO2), one Oxygen Analyzer (O2), one Gas Divider and one NOx converter efficiency checker.

The system must comply with the requirements set forth in Chapter 40 of the Code of Federal Regulations (CFR) 1065 subparts C & D (minimum version July 2007).

2 Applicable Specifications / STANDARDS / CODES

Specifications, standards and codes referenced in this document in effect on the opening of the "Invitation For Bid", form a part of this specification.

3 The System: (REQUIREMENTS)

3.1 The system shall be a turn key operation and all valves, solenoids, pumps, chillers, heaters, switches, wiring, fittings, connectors, fasteners, filter housings and filters, flowmeters, gauges, and controllers shall be provided to ensure a functioning console compliant to 40 CFR 1065.

3.2 All tubing, valves, and pump heads shall be made of material impervious to the corrosive nature of the exhaust gases and shall not retain pollutants on the internal walls. All stainless steel tubing will have smooth radius bends so that flow will not be restricted due to the bend. All welded seams and connections will be free of dross and shall not restrict flow.

3.3 The analyzer console shall fit in an area with the dimensions of 55" (L) X 62" (W) X 96" (H) and the vendor shall ensure proper servicing clearance.

3.4 The analyzer system sampling pumps shall be capable of drawing an exhaust sample through a 39 (minimum) foot heated line.

3.5 Control Station, Software and Reporting:

3.5.1 Be equipped with a minimum of a 19" color LCD monitor.

3.5.2 Be equipped with a standard QWERTY keyboard and mouse.

3.5.3 Be equipped with a Windows® or Linux based computer.

3.5.4 Software and Reporting:

- Application Software shall be supplied, that includes a backup software CD, and fully supported by the vendor.
- The Application Software shall be exclusive to the purchaser and be transferable to the control station system that runs the console owned by the purchaser.
- The software shall allow the collection of exhaust emission test data that shall automatically be saved in the control station electronically, and be made available to the user on two USB Access Ports.
- The exhaust emission test data shall be exported in a file format compatible with a Windows® based computer. (Microsoft Excel or Comma Separate Value or equivalent)

3.5.5 The control station and software must provide complete control of the analyzers and all its functions including the following:

- Monitor, control, and indicate the gas flow rate to all the analyzers.
- Zero, span, calibrate, purge, and reset for each of the analyzers.
- Perform the following Quality Assurance Checks: create calibration curves for each analyzer, test for leak checks, test calibration curves for accuracy, test drift on each analyzer, test for CO2 interference

of the CO analyzer, test for FID O2 interference, test chiller temperature and operation monitoring, test the converter efficiency in the NOx analyzer.

- The configurable commands and quality assurance checks shall automatically be saved in the control station electronically, and be made available to the user on two USB Access Ports.
- The control station shall perform normal diagnosis of each analyzer and set alarms and enter the problem into saved tables in the event a problem is detected.
- The control station shall provide a log of event and time of when a problem occurred.
- The control station shall keep a time record of the equipment's age for servicing purposes.
- The control station and software shall control the gas divider's operation through the monitor.
- The control station and menus shall use the English language.

3.6 Analyzers:

3.6.1 Each analyzer shall provide 0-10V analog output at exterior of cabinet.

3.6.2 Two heated Oxides of Nitrogen Analyzers, using Chemiluminescent technology shall:

3.6.2.1 Be capable of separate and simultaneous measurement between the total NOx mode and NO (Nitric Oxide) mode to be capable of speciating the NOx sample.

3.6.2.2 Be equipped with chillers for water removal.

3.6.2.3 Be capable of a minimum ppm range of 0-3000.

3.6.3 One Total Hydrocarbon, using Heated Flame Ionization Detector technology shall:

3.6.3.1 Be capable of a minimum ppm range of 0-3000.

3.6.4 One Carbon Monoxide, using NonDispersive Infrared technology shall:

3.6.4.1 Be capable of a minimum ppm range of 0-2000.

3.6.5 One Carbon Dioxide Analyzer, using Nondispersive Infrared technology shall:

3.6.5.1 Be capable of a minimum CO2 range of 0-20%.

3.6.6 One Oxygen Analyzer, using Paramagnetic or Magnopneumatic technology shall:

3.6.6.1 Be capable of a minimum O2 range of 0-25%.

4. Preliminary Design

- Prior to fabrication of the console, the vendor shall submit working drawings to the engineering staff of CARB, in Stockton, California.

5 Documentation And Drawings

- The vendor will supply, with the console, two copies of the flow schematic and two copies of the wiring schematic diagram. All analyzers, valves, meters, controllers, switches, relays, etc., shall be identified and numbered on these drawings. These reference numbers shall also be placed on or adjacent to the actual component in the console.
- (Post Trend Analysis) The vendor shall provide two copies of the calculations applied to emission measurements, results, correction factors, and constants shall be supplied with the system documentation. The calculations, formulas, constants and mathematical functions shall be based upon 40 CFR 1065. Calculations that deviate from the CFR shall be shown to be equivalent.
- In addition, at least four (4) copies and a compact disk (CD) containing "pdf" file of complete instruction manuals specific to this console shall be provided. These manuals shall address the following:
 1. Performance specification, installation, operation, and preventive maintenance of the equipment.
 2. Service parts lists, identifying major components by manufacturer's part number and vendor's part number.
 3. Service manuals for individual major components.
 4. System options that may be purchased for future enhancements/upgrades.



State of California
Evaluation Requirements
Diesel Emissions Analyzer Console and Control System

Acceptance testing shall be performed to ensure proper operation of the Diesel Emissions Analyzer Console and Control System.

The Acceptance Test shall be performed under the following conditions:

1. The Acceptance Test will be a pass/fail test.
2. The Acceptance Test will consist of several individual tests described below in accordance with Chapter 40 of the Code of Federal Regulations (CFR) 1065 subparts C & D. Each specific element is listed below.
3. Passing the Acceptance Test will require that all tests run successfully.
4. The supplier will be allowed only three (3) attempts to pass the Acceptance Test.
5. The Acceptance Test will be performed by a supplier operator.
6. Acceptance testing shall be performed at the Stockton ARB facility. The vendor shall document all results and provide the results to ARB for review.

Acceptance Test Criteria:

1. Accuracy- Table 1, 1065.205 specifications, 1065.305 verification procedure.
2. Repeatability- Table 1, 1065.205 specifications, 1065.305 verification procedure.
3. Noise- Table 1, 1065.205 specifications, 1065.305 verification procedure.
4. Linearity- Table 1, 1065.307 specifications, 1065.307 linearity verification procedure.
5. Response- 1065.308.
6. Zero/Span Drift- 2.0 % of Point or measured value over a 24 hour period.
7. Interference Checks-
 - CO2 NDIR analyzer- 1065.350 H2O interference verification for CO2 analyzer.
 - CO NDIR analyzer- 1065.355 H2O and CO2 interference verification for CO analyzer.
 - FID- 1065.362 Non-stoichiometric raw exhaust FID O2 interference verification.
8. Quench Checks-
 - Chemiluminescent analyzer- 1065.370 CO2 and H2O quench verification.
9. Chiller NO2 Penetration- (1065.376) (if applicable based on design)
10. NOx NO2 to NO Efficiency (1065.378)
11. Vacuum-side leak verification (1065.345)
12. FID optimization and verification (1065.360)